KYDNR

(Kentucky Department for Natural Resources)

Division of Mine Permits

Publish date:
9/8/2014

WQC number: 807-0365-WQC-1

Public Notice

Closing Date:
10/7/2014

This letter serves as the formal notice of the receipt of an application for a Section 401 Water Quality Certification by the Kentucky Division of Mine Permits (KDMP). The purpose of this notice is to inform the public of active applications awaiting certification under Section 401 of the Clean Water Act (33 U.S.C. § 1341) and to solicit comments and information on any impacts to water quality as it related to the specific project. DMP will evaluate whether the project complies with Kentucky's water quality standards.

The comment period will run for 30 days, as is indicated in the upper portion of this notice. Any person who wishes to comment or receive information pertaining to the pending WQC application, must contact the WQC coordinator at 502 564-2320, or submit comments to: Water Quality Certification 2 Hudson Hollow, Frankfort KY 40601, within the 30 day comment period. All comments will be reviewed and water quality issues will be considered during the review process.

The public may review the detailed Compensatory Mitigation Plan at the Division of Mine Permits office at: #2 Hudson Hollow Frankfort, KY 40601

Commonwealth of Kentucky
Department for Natural Resources
Division of Mine Permits

Application for Water Quality Certification for Surface Coal Mining Activities

The Clean Water Act Section 401 Water Quality Certification (WQC) program in Kentucky ensures that activities which may involve a discharge into waters of the Commonwealth which require federal permit or license are consistent with Kentucky's water quality standards in 401 KAR Chapter 5. The Energy and Environment Cabinet has authorized the Department for Natural Resources to issue water quality certifications related to surface coal mining operations. The project may not start until all necessary approvals are obtained. For questions concerning the WQC process, contact the WQC Coordinator at (502)-564-2320.

1. **Applicant Name:** *Appolo Fuels, Inc.*
   Mailing Address: *684 Chapel Point Knoxville, TN 37934*

   Contact Person: *Gary Asher*
   Telephone No: (____)
   E Mail Address: *sal-g@tds.net*

2. **Consultant Name & Address:** *Howard Engineering & Geology, Inc.*
   P.O. Box 271, Harlan, KY 40831

   Telephone No. (*606*) *573-6924, x 115*
   E Mail Address: *dhoward@howardeng-geo.com*

3. **Provide a brief description of the proposed activity and stream impact.**
   Reestablishment of two intermittent streams which were allegedly impacted by construction of sediment retention ponds at the 807-0365 mine site. Also to compensate for alleged impacts to one of the streams that occurred as the result of hollow fill construction via payment of in-lieu fees.

4. **Project Location Information:**

   County *Bell* ; **USGS Quadrangle Name** *Eagan*

   Nearest Community & Road Intersection: *Fonde, KY 74 & KY535*

   Longitude *36-35-44* **Latitude** *83-52-04* (Approximate center of the project area)

5. **List the names of all streams affected by the proposed project:** *Two unnamed tributaries to Clear Fork of the Cumberland River*

6. For each affected watershed provide the acreage above the toe of the lowest permanent structure.
   52.0 ac. from the toe of HF 1. There are no permanent structures in the other unnamed tributary.

7. For each affected stream provide the linear feet of impact, whether the impact is temporary or permanent and indicate if the stream reach is classified as ephemeral, intermittent, or perennial.
   Intermittent stream in HF 1 area has 405 linear feet of permanent impacts. Intermittent stream in Pond #1 area has 250 linear feet of temporary impacts. Intermittent stream in Pond #4 area has 540 linear feet of temporary impacts.

8. Provide the acreage of wetlands that would be impacted: *N/A*

9. Beginning at the nearest intersection of two public roads, provide directions to the project site:

   The project site is to the east and west of the junction of KY 74 with KY 535.

10. Has application been submitted to the U.S. Army Corps of Engineers for this project? Yes *X* No ____. If yes, indicate type of application:

    NW 12 ____ NW 14 ____ NW 21 ____ NW 27 ____ NW 49 ____
    NW 50 ____ Individual ____ Other *X NW 32*

11. Provide the following permit numbers associated with this mining activity: SMCRA Permit No. *807-0365*, KPDES No. *KYG046449*

12. The following attachments must be provided:

    a. A watershed map showing all ponds and hollowfills to scale with all intermittent, and perennial stream reaches clearly identified.
    b. A 7.5 minute topographic map delineating the proposed project area.
    c. A copy of the complete Compensatory Mitigation Plan

List all other plans and profiles included with this application:
Other plans and profiles included with this application are part of the Stream Restoration Plan which is included in the COE NWP 32 application.

I hereby request approval for construction across or along a stream as described in this application and supporting attachments. All of the information provided with this application is true and accurate to the best of my belief and knowledge.

Applicant's Signature: Daryl Cohen, Date: 8/26/14

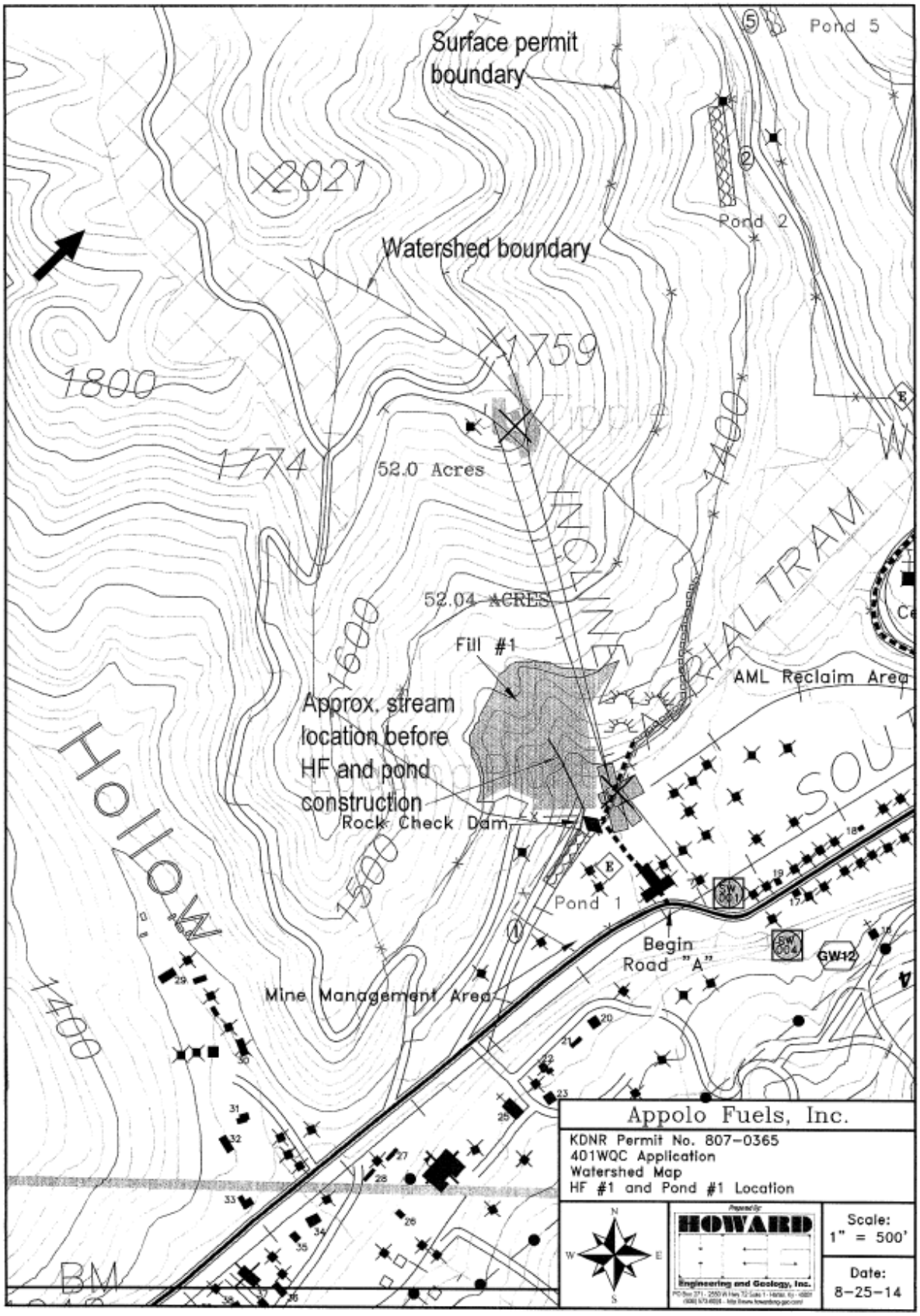
If signed by applicant's agent, attach power of attorney

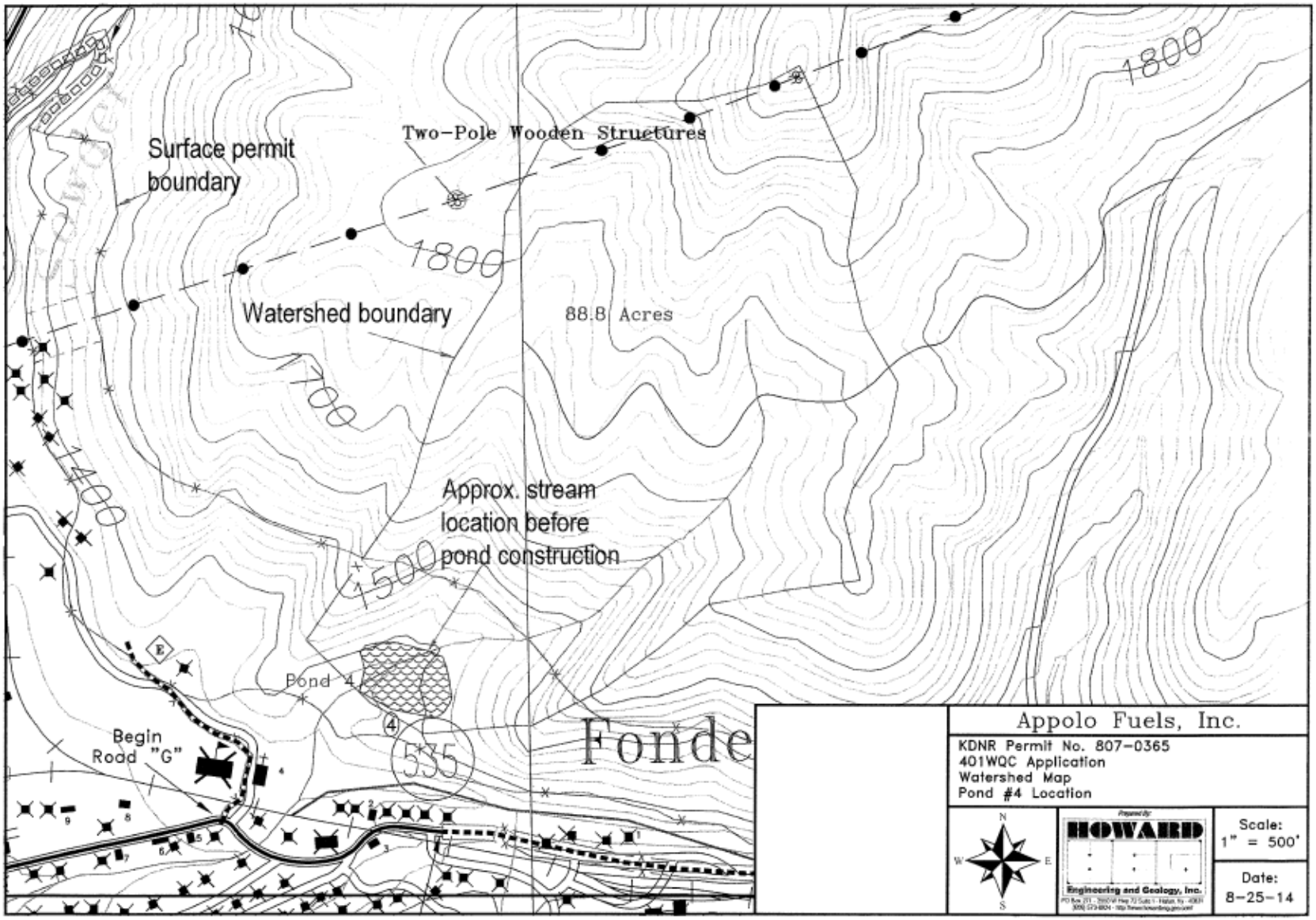
SUBMIT APPLICATION AND ATTACHMENTS TO:

WQC COORDINATOR
DIVISION OF MINE PERMITS
#2 HUDSON HOLLOW
FRANKFORT, KENTUCKY 40601

Attachment A

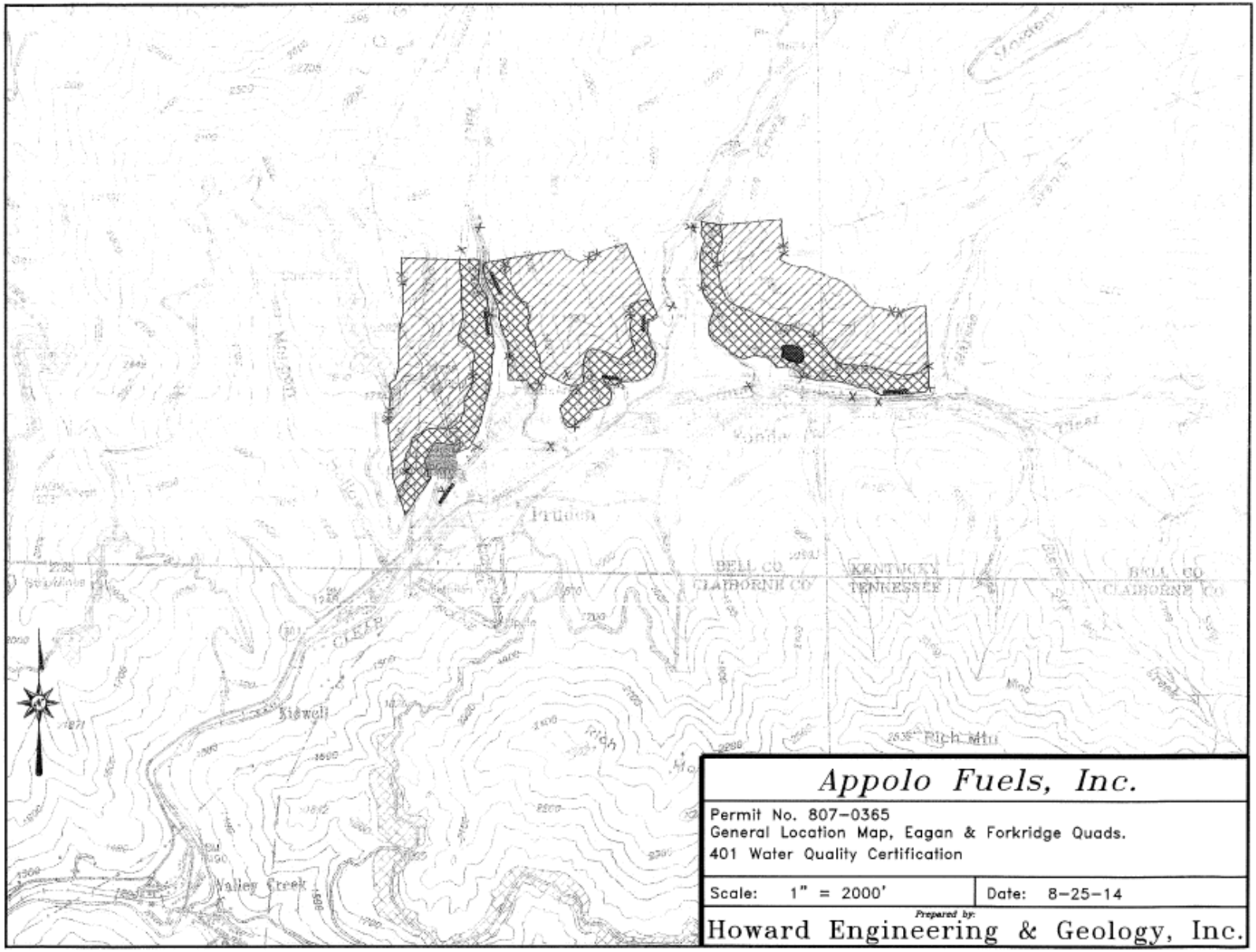
Watershed Maps of Impacted Areas


Surface permit boundary
Pond 5
Pond 2
Watershed boundary
2021
1759
1800
1774
52.0 Acres
1400
52.04 ACRES
Fill #1
AML Reclaim Area
Approx. stream location before HF and pond construction
Rock Check Dam
Pond 1
Begin Road "A"
GW12
Mine Management Area
Hollow
1600
1500
1400
BM
Appolo Fuels, Inc.
KDNR Permit No. 807-0365
401WQC Application
Watershed Map
HF #1 and Pond #1 Location
Prepared by:
HOWARD
Engineering and Geology, Inc.
Scale:
1" = 500'
Date:
8-25-14


Surface permit boundary
Two-Pole Wooden Structures
1800
Watershed boundary
88.8 Acres
1700
1400
1500
Approx. stream location before pond construction
E
Pond 4
4
535
Begin Road "G"
Fonde
Appolo Fuels, Inc.
KDNR Permit No. 807-0365
401WQC Application
Watershed Map
Pond #4 Location
N
W
E
S
HOWARD
Engineering and Geology, Inc.
Scale: 1" = 500'
Date: 8-25-14

Attachment B

Location Map of the Proposed Project Area



Appolo Fuels, Inc.

Permit No. 807-0365
General Location Map, Eagan & Forkridge Quads.
401 Water Quality Certification

Scale: 1" = 2000'	Date: 8-25-14

Prepared by:
Howard Engineering & Geology, Inc.

Attachment C

Complete Copy of the Stream Restoration Plan

STREAM RESTORATION PLAN

APPOLO FUELS, INC.
EPA Docket No. CWA-04-2014-5751
KDNR PERMIT #807-0365
DA FILE #LRN-2008-01177

STREAM RESTORATION PLAN FOR IMPACTS TO 1,195 LINEAR FEET OF UNNAMED TRIBUTARIES OF CLEAR FORK IN BELL COUNTY, KENTUCKY

July 21, 2014

Prepared by:
Howard Engineering & Geology, Inc.
P.O. Box 271
Harlan, KY 40831
(606)573-6924
Fax: (606)573-9543

STREAM RESTORATION PLAN

Appolo Fuels, Inc. (hereafter referred to as Appolo) is proposing actions in this Stream Restoration Plan (SRP) to restore two unnamed tributaries in the Clear Fork watershed (HUC 05130101) which sustained impacts from mining activities associated with the Jellico Mine #1. The original KDNR permit (#807-0365) was issued February 20, 2009. A Kentucky Pollutant Discharge Elimination System permit (KYG046449) was issued on July 8, 2011. A Nationwide Permit #14 (NWP 14), DA File #LRN-2008-01177, was issued by the United States Army Corps of Engineers (USACE) on September 13, 2011. The impacted streams are an unnamed tributary (UT) to Clear Fork where Hollow Fill 1 (HF 1) and Pond 1 were constructed and an UT Clear Fork where Pond 4 was constructed. The UT to Clear Fork at the HF 1/Pond 1 location is an intermittent stream approximately 655' feet long. The UT Clear Fork at the Pond 4 location is an intermittent stream of about 540 linear feet (LF). See Exhibit A for a map of the stream locations.

Section 404 of the Clean Water Act requires a permittee to provide compensation for unavoidable impacts to waters of the United States (WOUS) through activities to restore streams that were unavoidably impacted by mining activities, or via payments to mitigation banks or in-lieu fee programs. Stream restoration projects must create an equal or greater amount of ecological integrity than what was lost due to impacts. This is referred to as ecological lift. Appolo is proposing mitigation for impacts to the UTs of Clear Fork at the Pond 1 and Pond 4 locations through stream restoration, and for impacts associated with the construction of HF 1 through payment of in-lieu fees (ILF). This SRP identifies the project locations and mitigation efforts to offset impacts to jurisdictional waters and is prepared in accordance with the April 10, 2008 *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule* (Sections 332.3 through 332.8). Appolo agrees to compensate for impacts to 1,195 LF of WOUS as defined below:

- for 250 LF of impacts to UT Clear Fork at the Pond 1 location through stream restoration
- for 405 LF of impacts to UT Clear Fork at the HF 1 location through the purchase of ILF
- for 540 LF of impacts to UT Clear Fork at the Pond 4 location through stream restoration

1.0 OBJECTIVE

The objective of this restoration plan is to restore stream functions and values affected by surface mining operations associated with KDNR permit #807-0365. The mitigation efforts will address the needs of the Clear Fork watershed by restoring the stream resources which have been lost.

2.0 SITE SELECTION

Site selection was determined by watershed needs within the confines of the permit boundary. Mitigated reaches are to be constructed in the drainage areas where the impacts occurred. One reach will be restored in the Pond 1 location, and another will be restored in the Pond 4 location. The locations of the restored reaches can be seen on Exhibit B. These sites offer the best opportunity to achieve ecologically self-sustaining aquatic resources. Loss of stream resources at the HF 1 location will be compensated for through payment of in-lieu fees to the Kentucky Wetland and Stream Mitigation Fund.

3.0 SITE PROTECTION

Appolo agrees to protect the site to the extent practicable from incompatible uses that might jeopardize the objectives of the Stream Restoration Project for the duration of the restoration work and five year monitoring period. Access will be blocked to prevent access to the mitigation areas by the general public. Signs will be posted designating the areas as stream restoration zones. Appolo is the lessee of the project site and will retain control over site access during the restoration monitoring periods and life of the lease pursuant to restrictions in the lease document

4.0 BASELINE INFORMATION

4.1 *HISTORIC AND EXISTING LAND USE/LAND COVER*

At present, land use/land cover within the local watershed, of which the project area is a component of, includes forestland, active surface mining, underground mining, and reclaimed areas that are in various stages of forest succession. Past land uses of the local watershed include timber, mining, oil and gas exploration, and wildlife habitat. Mining, in particular, has had an influence on historical land use within the project area, as surface activity has occurred there since the 1950s. Access roads and mine exploratory roads crisscross the region. Many ridge tops and adjacent upper slopes of the area were mined or timbered within the last 60 years. Slopes of the land in the project area are 10% or greater on side slopes, and 0-10% in jurisdictional water bottoms.

Additionally, during the half-century between 1870 and 1920, the forests of Kentucky were subjected to such intensive logging that by the end of this period the original forests had been essentially eliminated (Clarkson, 1968). Extensive forest fires, fueled by large amounts of logging slash, also destroyed large areas of virgin timber. As a result of the extensive logging and frequent fires that occurred throughout the forest region during this period, the present day forest vegetation is mostly a mosaic of second- and third-growth forest communities (Stephenson, 1993).

The project area lies in the Cumberland Mountains/Cumberland Plateau transition of the Appalachian mixed mesophytic forest ecoregion. The dominant species within this forest realm include oaks (*Quercus* ssp.), hickories (*Carya* ssp.), American beech (*Fagus grandifolia*), maples (*Acer* ssp.), and hemlock (*Tsuga canadensis*). The forestland of the project area is second-growth deciduous forest. Canopy tree species include black walnut (*Juglans nigra*), sugar maple (*Acer saccharum*), basswood (*Tilia americana*), tuliptree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), sycamore (*Platanus occidentalis*), and black locust (*Robinia pseudoacacia*). Common understory species throughout the project area include flowering dogwood (*Cornus florida*), sumac (*Rhus* spp.), black locust, and eastern redbud (*Cercis canadensis*).

4.2 *WILDLIFE AND HABITAT QUALITY*

The mixed mesophytic forest of the Appalachian Mountains is one of the most biologically diverse temperate forest regions on earth. The forestland of the project area is second-growth deciduous. Section 4.1 provides listing of common tree species for the ecoregion and the project area.

Mammalian species that can be found in the region most likely include the big brown bat (*Eptesicus fuscus*),northern bat (*Myotis septentrionalis*), the silver-haired bat (*Lasionycteris noctivagans*), tri-colored bat (*Perimyotis subflavus*), evening bat (*Nycticeius humeralis*), *Lasiurus* bat species such as the red bat (*Lasiurus borealis*), *Myotis* bat species such as the little brown bat (*Myotis lucifugus*), woodland jumping mouse (*Napaeozapus insignis*), deer mice such as the North American deermouse (*Peromyscus maniculatus*), the eastern harvest mouse (*Reithrodontomys humulis*), golden mouse (*Ochrotomys nutalli*), woodrats (*Neotoma* spp.), northern short-tailed shrew (*Blarina brevicauda*), *Sorex* shrew species such as the smoky shrew (*Sorex fumeus*), moles such as the eastern mole (*Parascalops aquaticus*), southern red-backed vole (*Myodes grapperi*), *Microtus* vole species such as the woodland vole (*M. pinetorum*),eastern chipmunk (*Tamias striatus*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*S. niger*), southern flying squirrel (*Glaucomys volans*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), Appalachian cottontail (*Sylvilagus obscurus*), beaver (*Castor canadensis*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), bobcat (*lynx rufus*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), white-tailed deer *(Odocoileus virginianus)* and American black bear *(Ursus americanus*). Based upon the Kentucky Division of Fish and Wildlife Resources' review of the Kentucky State Nature Preserves Commission's Natural Heritage Database indicates that occurrences of state/federal designated threatened or endangered species including the Indiana bat (*Myotis sodalis*) have not been recorded within or adjacent to the project area.

Common reptiles and amphibians of the region include the black rat snake (*Elaphe obsoleta*), northern copperhead (*Agkistrodon contortrix mokasen*), North American racer (*Coluber constrictor*), ring-necked snake (*Diadophis punctatus*), milksnake (*Lampropeltis triangulum*), northern watersnake (*Nerodia sipedon*), queen snake (*Regina septemvittata*), red-bellied snake (*Storeria occipitomaculata*), garter snake (*Thamnophis sirtalis*), smooth earthsnake (*Virginia valeriae*), timber rattlesnake (*Crotalus horridus*), eastern fence lizard (*Sceleporus undulatus*), ground skink (*Scincella lateralis*), five-lined skinks (*Plestiodon* spp.), eastern box turtle (*Terrapene carolina*),snapping turtle (*Chelydra serpentina*), northern map turtle (*Graptemys geographica*), eastern spadefoot (*Scaphiopus holbrookii*), true toads (*Anaxyrus* spp.), northern cricket frog (*Acris crepitans*), Cope's gray treefrog (*Hyla chrysoscelis*), spring peeper (*Pseudacris crucifer*), multiple frog species of the *Lithobates* genera, red spotted newt (*Notophthalmus viridescens*), slimy salamanders (*Plethodon* spp.), northern zigzag salamander (*Plethodon dorsalis*), Cumberland Plateau salamander (*Plethodon kentucki*), southern ravine salamander (*Plethodon richmondi*), spotted salamander (*Ambystoma maculatum*), green salamander (*Aneides aeneus*), dusky salamanders (*Desmognathus* spp.), seal salamander (*Desmognathus monticola*), southern two-lined salamander (*Eurycea cirrigera*), spring salamander (*Gyrinophilus porphyrictus*), four-toed salamander (*Hemidactylium scutatum*), midland mud salamander (*Pseudotriton montanus*), and red salamander (*Pseudotriton ruber*).

The proposed project will restore disrupted water resources to the Clear Fork watershed. Two unnamed tributaries to Clear Fork were affected by mining activities associated with Jellico Mine #1. During mitigation, Appolo will restore the impacted reaches at the Pond 4 and Pond 1 locations.

During reclamation, the site will be returned to a post-mining land use of forest land. Herbaceous plants such as annual rye and lespedeza will be used for temporary ground cover, to provide erosion control, and for bank stabilization. Trees will also be planted within

riparian zones for further ground stabilization, as well as to provide wildlife habitat, and for foraging and other environmental values. Species selection is subject to availability, but likely candidates include sugar maple (*Acer saccharum*), green ash (*Fraxinus pennsylvanica*), shellbark hickory (*Carya laciniosa*), and tuliptree (*Liriodendron tulipifera*). Additionally, woody vegetation will be planted on side slopes and tops of banks to prevent erosion. Speckled alder (*Alnus rugosa*), silky dogwood (*Cornus amomum*), and spicebush (*Lindera benzoin*) are potential species to be planted for this purpose, and to provide food for wildlife.

4.3 *STREAM HABITAT ASSESSMENTS AND INVENTORY*

The United States Environmental Protection Agency (EPA) contends two jurisdictional streams have been impacted at the Jellico Mine #1 project site. Both streams have been categorized as intermittent, and have a combined linear distance of 1,195 feet. Impacts to these waters have been quantified with respect to stream function and length. Assessments to determine baseline stream habitat conditions for the impacted waters were conducted above and below the impacts. A stream segment's Habitat Assessment Value (HAV) score is a summation of individual quality assessments for ten physical parameters observed in the field. HAV data for the impacted reaches was assessed during physical water quality surveys using the EPA's Rapid Bioassessment Protocol (RBP) field data sheets for high gradient streams based on reference reaches located above and below the affected stream segments. Numerous site visits have been conducted, and multiple HAV scores have been generated by Howard Engineering & Geology, Inc. (HEG), USACE, and the EPA. The final values being used as a reference in this SRP were provided by the EPA. The HAV for HF 1/Pond 1 and for Pond 4 are 135 and 92 respectively. Based on the HAV alone the UT in the HF 1/Pond 1 location would be classified as a sub-optimal stream, while the reach in the Pond 4 area would be classified as marginal.

The HAV is a score of physical characteristics of a given reach. Paired with either macroinvertebrate data or conductivity measurements (or both) an Ecological Integrity Index (EII) score can be generated. The EII assigns a qualitative value to a station or stream reach, as an average of several stations along a stream reach. EIIs are determined via the EII calculator version 2002.6, which is part of the Stream Assessment Protocol for Headwater Streams in the Eastern Kentucky Coalfield Region (EKSAP). The product of an EII multiplied by respective length is the Ecological Integrity Unit (EIU). The EIU quantifies stream impacts, and is the unit used to describe the amount of impacts as well as the amount of compensatory mitigation credits. The EKSAP version 3.4 was used to evaluate the amount of functional "gains/losses" of the projected EIUs for proposed mitigation. Through varying enhancement techniques to affect the HAV portion of the EII calculation or by increasing lineal footage of mitigated segments, the mitigation plan can be designed to achieve a "no net loss" of EIUs as demonstrated by the EKSAP calculations (Exhibit C) contained in the Restoration Plan.

Each of the stream reaches impacted have experienced previous surface disturbance and degradation. Field observations were conducted in order to estimate the pre-mining physical conditions of the disturbed streams. HAVs and conductivity readings were entered into the EII calculator to determine the pre-impact EII values. Due to extensive previous disturbances these jurisdictional reaches resulted in relatively low habitat scores. Table 1 presents the baseline (i.e. pre-impact) summary of the impacted reaches.

Table 1 - Baseline Ecological Integrity Units

Reach ID	Location	Length (ft)	HAV	EII	EIU
Lower S1	HF 1/Pond 1	250	111	0.16	40.0
Upper S1	HF 1/Pond 1	405	135	0.28	113.4
S2	Pond 4	540	92	0.29	156.6
Total linear footage		**1,195**	**Total EIU lost**		**310.0**

5.0 DETERMINATION OF CREDITS

In Eastern Kentucky credits from the Kentucky Wetland and Stream Mitigation Program are equal to EIUs. The current price per credit in the Upper Cumberland River watershed is $610.00. Using the EKSAP calculator it was determined that it would require 136.08 EIUs to compensate for the loss of stream in the Upper S1 area. At the current rates the cost would be $83,009.

Table 2 – Required ILF

Reach ID	EIU Lost	EIU Needed to Compensate	Cost at Current ILF Rate
Upper S1	113.4	136.08	$83,009
Total	**113.4**	**136.08**	**$83,009**

5.1 *PROJECTED EIUS*

Appolo will raise the overall ecological integrity of the restored reaches. Table 3 quantifies the project EIUs.

Table 3 – Ecological Integrity Units of Impacted Reaches

Reach ID	Estimated Pre-Impact EIU	EIU Needed to Provide Mitigation	Estimated EIU in 5 years
Lower S1	40.0	48.0	82.5
Upper S1	113.4	136.08	133.7
S2	156.6	187.9	199.8
Total	**310.0**	**372.0**	**416.0**

The estimated ecological integrity is based on the reaches having a conductivity measurement of 500µS. The actual conductivity of the restored streams will likely be lower than this, thus a greater number of EIUs will be achieved. Appolo will be improving the physical conditions of the stream channels and riparian zones to create ecological lift.

Table 4 – Overall Project EIU Gains/Losses

Reach ID	Estimated Pre-Impact EIU	EIU Needed to Provide Mitigation	Estimated EIU in 5 years
Lower S1	40.0	48.0	82.5
S2	156.6	187.9	199.8
Total	**196.6**	**235.9**	**282.3**

6.0 MITIGATION WORK PLAN

The first phase of on-site mitigation will be implemented by constructing a natural, normal flow channel (bed width) within the bankfull width in the original stream course above Pond 4. The identification of the proposed mitigation reaches is shown on Exhibit B. Rosgen-type stream restoration methods will be used to construct natural stream channels. An excavator, backhoe, or other heavy equipment will be used to pack the soil in the stream channels, to build stream structures such as step-pools, and to place bed material into the stream. Clay may be used to line the channels in order to retain surface flow. Work in the Pond 1 and Pond 4 locations will begin after approval is granted to remove the ponds by KDNR. In the Pond 1 and Pond 4 locations channels will be constructed in a sinuous pattern to facilitate and encourage the development of natural meanders. Where practicable, natural stream channel structures such as J-hooks, cross vanes, and log weirs will be utilized where changes in current direction or energy dissipation are expected. The actual number, type and locations of these structures may vary and will be dependent on stream characteristics encountered in the field. Clean, durable rock material will be layered in the streambed to create epifaunal substrate. Logs or root wads may also be used to diversify niche spaces. All work will be performed during suitable weather conditions and during low flow periods to decrease impacts to water quality. Exhibit D shows the plan designs for the mitigated reaches. Typical cross-section and profile drawings are also included for the proposed mitigation. Target ranges for stream dimensions are as follows:

Table 5 - Channel Geometry Ranges

Bed Slope	Bankfull Width	Flood Prone Width	Riffle to Pool Ratio	Riffle Depth	Riffle Length	Pool Depth	Pool Length	Sinuosity λ	Sinuosity Belt Width
0.04 - 0.09	2' - 4'	4' - 8'	1:1	0.5" - 2"	3' - 5'	0.5' - 1.5'	2' - 5'	30' - 40'	8' – 16'

The second phase of on-site mitigation will occur after the natural channel has been constructed; riparian revegetation will be planted on each side of the reconstructed channel as prescribed in Table 6 in the proposed riparian zone (50 linear feet from the edge of each bank). The revegetation plan has been designed to provide both short-term erosion control through immediate herbaceous groundcover along with long-term restoration of stream function and bank stability. Herbaceous groundcover will be planted by employing the utilization of a hydro-seeder with soil amendments included. Fiber mulch will be included in the process at a rate of 1500 lbs/ac. Proposed riparian species were chosen based on their value to stream function, availability, non-invasiveness, tolerance to minespoil type soil conditions, availability and native occurrences and are from Attachment 8 of *"Draft Stream Mitigation Guidelines"* by the Kentucky Division of Water, 2002. Shellbark hickory was chosen as a hardwood exfoliating bark tree species for its value as potential roost habitat for the Indiana Bat *(Myotis sodalis)*, as required by KDNR. Tree and shrub seedlings will be planted during the early spring or late fall planting periods using the dibble bar or mattock method. The trees and shrubs will be planted on an irregular, mixed distribution pattern. Seed mixtures planted will be 98% pure and free of any noxious or invasive plant species. Stocking densities shall be determined with a statistical confidence of ninety (90%) percent.

Table 6 - Riparian Zone Revegetation

Common Name	Scientific Name	Seeding Rate
Herbaceous groundcover		
Switchgrass	*Panicum virgatum*	10 lbs./ac.
Annual Rye	*Secale cereale*	25 lbs./ac.
Deertongue grass	*Panicum clandestinum*	2 lbs./ac.
Trees		
Red maple	*Acer rubrum*	20 stems/ac.
Green ash	*Fraxinus pennsylvanica*	20 stems/ac.
Shellbark hickory	*Carya laciniosa*	130 stems/ac.
Black Walnut	*Juglans nigra*	125 stems/ac.
Yellow poplar	*Liriodendron tulipifera*	45 stems/ac.
Shrubs		
Alder	*Alnus serrulata*	40 stems/ac.
Silky Dogwood	*Cornus amomum*	30 stems/ac.
Spicebush	*Lindera benzoin*	40 stems/ac.

Note: Additional species may be added for nitrogen fixing capability.

In the event that any exotic or undesirable species occur within the riparian zone control techniques described by the Nature Conservancy that follow NPS IPM guidelines will be utilized for removal or elimination. These guidelines include recommended methods for removal including provisions for utilization of power tools (chain saws, weed whips, winches); hand tools (shovels, mattocks, loppers, grip hoists, machetes, chokers); and manual removal. Manual removal is a relatively inexpensive method generally utilized for the removal of herbaceous and shallowly-rooted plants and can be used for plowing or pulling out large individual plants.

7.0 MAINTENANCE PLAN

The mitigated reaches are designed to be self-sustaining aquatic resources. Once construction is completed, Appolo will continue to observe the viability of the reaches for the duration of the required monitoring period, and perform maintenance on an "as-needed" basis for five (5) years.

8.0 PERFORAMANCE STANDARDS

In order to determine whether the Restoration Project is achieving its objectives, progressive improvements must be made in areas that contribute to the projects ecological integrity. Pre-impact HAV values are marginal only averaging a score of 106. HAV scores at maturity are expected to have a sub-optimal ranking with a score of 145 or better. Factors to be used to determine that the project is a success are shown in the following table.

Table 7 - Factors to Determine Successful Stream Restoration

Parameter/Observation	Success Standards	Determination Method
Field pH	Report Only	Field Meter
Specific Conductance	Report Only	Field Meter
Dissolved Oxygen	Report Only	Field Meter
Epifaunal Substrate	Min. 70% favorable substrate	Pebble Count; estimate of available
Embeddedness	Max. 20% embeddedness	Pebble Count; measure embeddedness
Velocity/Depth Regime	Maintain step-pool or riffle-pool sequences similar to approved plans.	Longitudinal Profile
Sediment Deposition	Little or no enlargement of islands or point bars and <5% of the bottom affected by sediment deposition.	Pebble count in pools
Channel Flow Status	Maintain width/depth ratio similar to accordance with plans.	Determine from X-sections
Channel Alternation	Maintain minimal channelization similar to approved plans.	Longitudinal profiles; X-sections
Frequency of Riffles	Maintain step-pool or riffle-pool sequences similar to approved plan.	Longitudinal profile
Bank Stability	Banks stable	Bank Erosion Index; observe density & depth of plant roots, near bank shear stress.
Vegetative Protection	Approved width of riparian zone planted with 450 stems/acres surviving.	Measure replanted width; estimated stem count.
Riparian Zone	Riparian zone with a variety of species alive and healthy.	Measure replanted width; estimated stem count.
Habitat Score	Sub-Optimal.113-165	Rapid Bioassessment Protocol

9.0 MONITORING PLAN

Once the stream mitigating factors outlined in this plan have been completed within the stream restoration project, a licensed professional engineer shall certify to EPA that construction of the physical habitat met or exceeded the minimum parameters applicable under the mitigation plan. The minimum parameters shall include restoration of the physical habitat as determined by the RBP for the affected project. As shown in the plans, the applicant plans to raise the overall amount of EIU during stream restoration of the impacted reaches.

Post-construction monitoring reports consisting of RBP field data sheets, photographs, and narrative descriptions shall be submitted annually on or before December 31st for a period of five (5) years. Monitoring shall include habitat structures, bank stability, silt control

measures, woody and herbaceous vegetation, and flow provisions of the restored streams. After the monitoring period has been completed, Appolo shall, upon approval by EPA, be released from all obligations.

10.0 LONG-TERM MANAGEMENT PLAN

The aquatic resources being restored by Appolo are designed to be self-sustaining. Any future disturbance of the project area will be restricted by and subject to Clean Water Act permitting.

11.0 ADAPTIVE MANAGEMENT PLAN

In the event of unforeseen changes in site conditions, or if failure to meet performance standards should occur, EPA will be notified as soon as possible. Appolo and EPA will collaborate to devise the most practicable adaptive measures.

12.0 FINANCIAL ASSURANCES

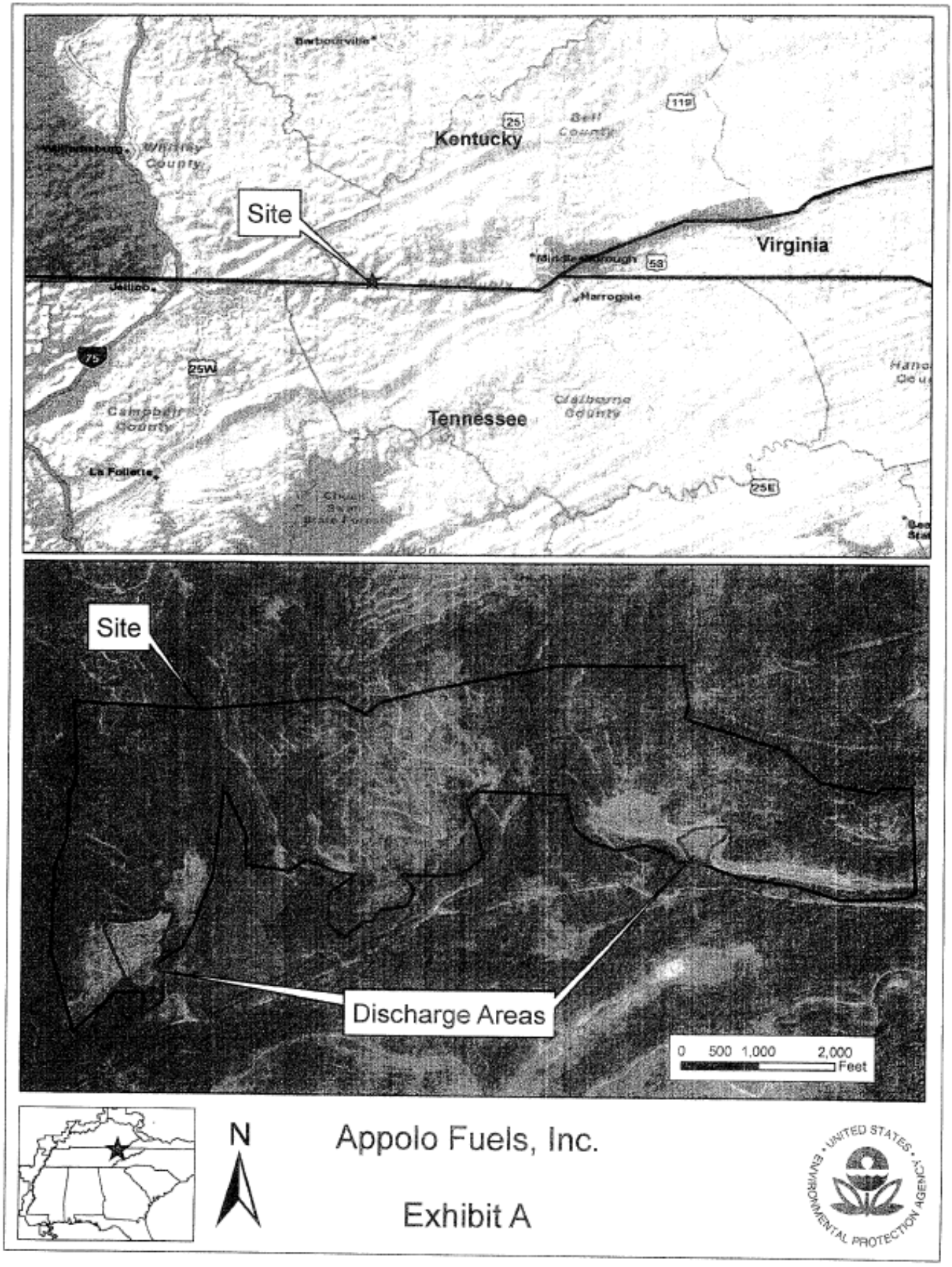
The SMCRA permit includes reclamation bonding that should be sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed. Stream restoration is included as part of pond removal which must be completed before final bond release.

Appolo Fuels, Inc. has successfully completed numerous stream restoration projects in southern Bell County, KY and northern Claiborne County, TN. It is familiar with the geomorphic and hydrologic conditions of the project site. This experience and familiarity should be reassurance that the proposed Stream Restoration Plan will successfully create the desired ecological lift to fully offset the impacts occurred during mining operations.

References

Clarkson, R.B. (1968). Tumult on the mountains: Lumbering in West Virginia 1770-1920. Parsons, West Virginia: McClain Printing Company

Stephenson, S.L., Ash, A.N., & Stauffer, D.F. (1993). Appalachian oak forests. In W.H. Martin, S.G. Boyce, & A.C. Echternacht (Eds.), *Biodiversity of the Southeastern United States: Upland terrestrial communities* (pp 255-337). New York, New York: John Wiley & Sons, Inc.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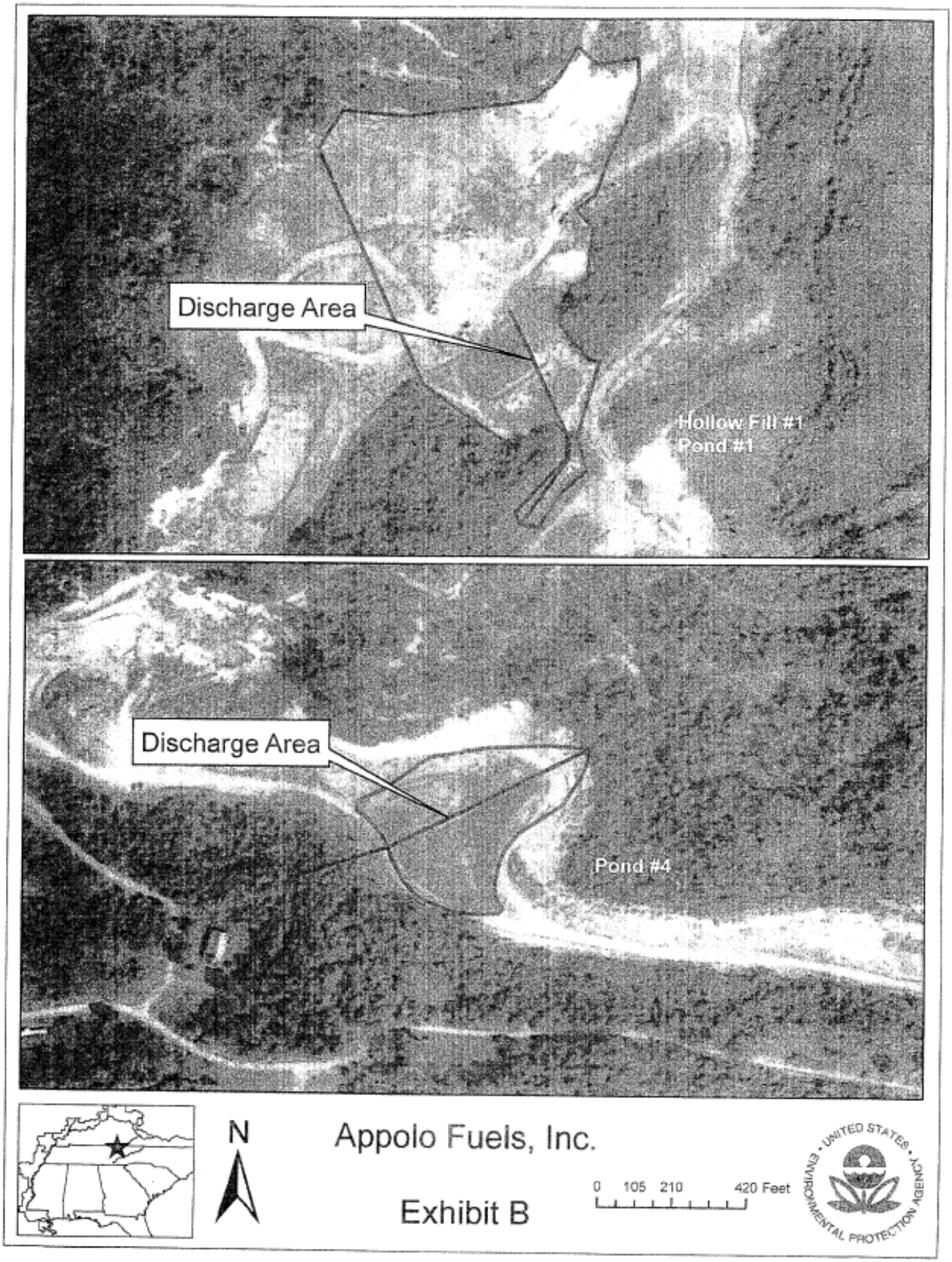
Kentucky
Bell County
Whitley County
Site
Virginia
Jellico
Harrogate
75
25W
Campbell County
Tennessee
Claiborne County
La Follette
25E
Site
Discharge Areas
0 500 1,000 2,000
Feet
N
Appolo Fuels, Inc.
Exhibit A
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY


Discharge Area
Hollow Fill #1
Pond #1
Discharge Area
Pond #4
N
Appolo Fuels, Inc.
Exhibit B
0 105 210 420 Feet
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY